

What is Claimed:

1. A container release assembly for use with a vending machine for vending items from a queue, the assembly comprising:

- (a) a first release apparatus having a first front engaging member and a first rear engaging member, each of the first front engaging member and the first rear engaging member pivotally positioned in relation to a first gate, the first release apparatus positioned on a first side of the item to be vended;
- (b) a second release apparatus having a second front engaging member and a second rear engaging member, each of the second front engaging member and the second rear engaging member pivotally positioned in relation to a second gate, the second release apparatus positioned on a second side, opposite the first side, of the item to be vended;
- (c) the first release apparatus and the second release apparatus being operably and pivotally connected together; and
- (d) the first and second front engaging members being operative to engage a first item in the queue, and the first and second rear engaging members being operative to engage a second item in the queue.

2. The assembly according to claim 1, wherein:

- (a) the first front engaging member is pivotally connected to the first gate by a first camming mechanism,
- (b) the first rear engaging member is pivotally connected to the first gate by a first fast camming mechanism, the first fast camming mechanism having a faster camming motion than the first camming mechanism;
- (c) the second front engaging member is pivotally connected to the second gate by a second camming mechanism; and
- (d) the second rear engaging member is pivotally connected to the second gate by a second fast camming mechanism, the second fast camming

mechanism having a faster camming motion than the second camming mechanism.

3. The assembly according to claim 2 wherein the first and second fast camming mechanisms comprise a bifurcated feature.
4. The assembly according to claim 3, wherein the bifurcated feature is a kidney shaped slot formed in the first and second gates.
5. The assembly according to claim 1 wherein:
  - (a) the first gate is pivotally connected to a first sidewall between the first front engaging member and the first rear engaging member; and
  - (b) the second gate is pivotally connected to a second sidewall between the second front engaging member and the second rear engaging member.
6. The assembly according to claim 1 wherein:
  - (a) a portion of the first front engaging member extends through a slot in the first gate and is pivotally connected to a first sidewall of the assembly; and
  - (b) a portion of the second front engaging member extends through a slot in the second gate and is pivotally connected to a second sidewall of the assembly.
7. The assembly according to claim 1 wherein each of the first front engaging member, second front engaging member, first rear engaging member and second rear engaging member comprises a vertical portion extending generally perpendicular to a floor of the assembly.

8. The assembly according to claim 1, wherein the first item in the queue has a first diameter and the second item in the queue has a second diameter, the second diameter being different than the first diameter.
9. The assembly according to claim 1, wherein the first item in the queue and the second item in the queue are beverage containers.
10. A method of vending a first item from a queue of a vending machine, the method comprising:
  - (a) retaining the first item in the queue with a pair of front engaging members of a release assembly; and
  - (b) releasing the first item from the release assembly and retaining a second item in the queue with a pair of rear engaging members of the release assembly.
11. The method according to claim 10, wherein retaining a second item in the queue with a pair of rear engaging members of the release assembly occurs faster than releasing the first item from the release assembly.
12. The method according to claim 10, further comprising:
  - (a) releasing the second item from the pair of rear engaging members and retaining the second item with the pair of front engaging members.
13. A vend item release apparatus configured for operative mounting adjacent a dispensing end of a vending machine tray configured to retainably hold a plurality of vend items in an ordered queue of such items, the release apparatus comprising:
  - (a) a front pair of item retainers configured to engage a first vend item of the queue;

- (b) a rear pair of item retainers configured to engage a second vend item of the queue, the second vend item positioned in the queue adjacent to the first vend item;
- (c) a plurality of actuators cooperatively interconnecting the front and rear pairs of item retainers, the actuators configured to alternately cause the front pair of item retainers to release the first vend item while the rear item retainers block dispensing movement of the second vend item, and to then cause the rear pair of item retainers to allow passage of the second vend item in a dispensing direction toward the front pair of item retainers which simultaneously move to engage and block dispensing movement of the second vend item.

14. The apparatus according to claim 13, wherein the plurality of actuators includes cam members cooperatively positioned to coordinate movements of the front and the rear item retainers.

15. The apparatus according to claim 14, wherein the cam members cause the rear pair of item retainers to move toward and away from each other at a relatively faster rate than the front pair of item retainers move.

16. The apparatus according to claim 13, wherein the first vend item has a first diameter and the second vend item has a second diameter, the second diameter being different than the first diameter.

17. The apparatus according to claim 13, wherein the first vend item has a first shape and the second vend item has a second shape, the second shape being different than the first shape.

18. The apparatus according to claim 13, wherein the release apparatus is configured to cause movement and controlled dispensing of the first and second vend items from

the queue of such items by guiding the vend items along an axis toward the dispensing end of the vending machine tray.

19. The apparatus according to claim 13 wherein the release apparatus includes a stabilizer operably connected with the front and rear item retainers for maintaining the movement tolerances of the item retainers within 10% of their engineered specifications.